IWFM / IDC Users Group Meeting

December 1, 2015

Definitions for IWFM and IDC

- *IWFM (Integrated Water Flow Model):* An integrated hydrologic model developed by DWR that simulates groundwater flows, surface flows and surface-subsurface flow interactions; it also computes land surface flow processes, land-use based water demands, and water supplies (groundwater pumping and stream diversions) to meet these demands
- *IDC (IWFM Demand Calculator):* The stand-alone land surface flow simulation component of IWFM; often used in agricultural water management plan updates, and generating distributed pumping and recharge values for other models (e.g. MODFLOW, MicroFEM, CalSim)

Update on IWFM and IDC Activities

- Activities related to engine and tools development
  - Budget output files are now printed as HDF5 files which are developed specifically for storing large scientific data; tests show file sizes reduced by 70% without a substantial increase in the run-times; Z-Budget output to HDF5 file will be implemented later
  - IWFM-2015 source code is now compiled into a dynamic link library (DLL) which allows other programs to link to IWFM easily (e.g. linkage to CalSim, SWAP, GUI)
  - Updated IWFM Tools Excel Add-in to import water budget data from HDF5 files into Excel. Also, new features include
    - Import only selected water budget flow terms for selected or all locations
    - Import water budget data (all or selected flow terms) for groups of locations

Update on IWFM and IDC Activities

- Activities related to engine and tools development *(continued)*
  - Started a new project to develop a generic IWFM-IDC GUI built as an extension to ESRI's ArcMap; the first phase of the project includes conversion of the existing C2VSim GUI into a generic IWFM GUI and combining the existing tools (mesh generator, Soil Data Builder) under this GUI
  - Started a new project with UC Davis to test IDC against field data measured in Scott Valley in Siskiyou Co., CA
  - Continuing quadrilateral mesh generation project with UC Davis
  - Possibly, work to implement water quality simulations in IWFM will start next year

Update on IWFM and IDC Activities

- Activities related to IWFM and IDC applications
  - Coarse and fine-grid versions of C2VSim are being improved and migrated to the latest IWFM numerical engine
  - SWAP-C2VSim linkage to assess the economic impact of the 2015 drought on California's agriculture (report available at https://watershed.ucdavis.edu/library); also available as a peer-reviewed article in the Hydrogeology Journal
  - Completed work for the simulation of natural flows (i.e. no agricultural and urban development) in the Central Valley using C2VSim by DWR

Update on IWFM and IDC Activities

- Organized a 2-day workshop for IDC and a 3-day workshop for IWFM; more workshops will be offered in 2016
- Continuing to provide technical support to IWFM and IDC users in their applications (e.g. Merced IWFM and IDC, Butte County IWFM, Yolo County IWFM, Kings IWFM, Walla Walla Basin IWFM, use of C2VSim by UC Davis and CH2M-Hill, SGMA group in DWR)